DOCUMENT RESUME

ED 297 743 IR 052 415

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TITLE Nonfiction Book Use by Academic Library Users. Research Report-88/1.
INSTITUTION OCLC Online Computer Library Center, Inc., Dublin, Ohio.
REPORT NO OCLC/OR/RR-88/1
PUB DATE 31 Mar 88
NOTE 60p.
AVAILABLE FROM OCLC Online Computer Library Center, Inc., 6565 Frantz Road, Dublin, OH 43017-0702 ($5.00).
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Books; *College Libraries; Higher Education; *Information Systems; Interviews; *Library Research; *Nonfiction; Questionnaires; Surveys; Tables (Data); User Needs (Information); *Use Studies
IDENTIFIERS *Electronic Books

ABSTRACT

This investigation of the use of nonfiction books borrowed from an academic library--the Main Library at the Ohio State University--examined two premises which underlie the creation of full-text electronic information systems of nonfiction books: that such books are generally read to obtain information, and that they tend to be read in parts. Data were also collected on the methods users employed for selecting nonfiction books and the features of the book that were used to find information. Interviewing slots were randomly selected from two-hour time periods during library operation hours, and 426 users returning their nonfiction books during these slots were interviewed between February 2 and March 8, 1987. Overall, the findings largely supported the premises under study. They indicated that 23.2% of the nonfiction book users needed the book for school, read one-fourth of the book or less, and used the table of contents or book index to find information. It was concluded that nonfiction books seem appropriate candidates for electronic access if directed at this subgroup of users in an academic environment. Data are reported in 34 tables and four figures. Appendixes include the interview script, an explanation of estimating the number of users missed by the interviewers, and the randomization methods used. (5 references) (CGD)

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1988 March 31 OCLC/OR/RR-88/1

Nonfiction Book Use by Academic Library Users

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Abstract

As we advance into the age of electronic publishing, the benefits and problems of providing access to the full text of nonfiction books need to be investigated. Because nonfiction books present factual information, they may be read specifically to obtain information. The fact that users may refer to any part of nonfiction books to obtain information without reading the text sequentially makes creating full-text nonfiction book systems attractive. Offering full text of nonfiction books, however, assumes that (1) nonfiction books are generally read to obtain information and (2) they tend to be read in parts. This study examines these premises in an academic library. The study also collected data on the methods users employ for selecting nonfiction books and the features of the book used to find information.

The Main Library of The Ohio State University was selected for this study. We interviewed 426 users from February 2 through March 8, 1987. The hours of library operation were divided into two-hour time periods. We randomly selected interviewing slots from these two-hour time periods. Users who were returning nonfiction books for themselves during these randomly selected slots were interviewed.

Overall, the findings support the two premises which underlie the creation of full-text electronic information systems of nonfiction books. Nonfiction books are generally read to obtain information and at least half of the use is for obtaining specific information. Users generally read just part of a nonfiction book, about half of the users read one-fourth of the book or less.

Questions on how users selected the nonfiction book revealed that 46.5% had prior knowledge of the book, 37.7% used the library catalogs to select the book, and 15.8% browsed the shelves. What features are used for finding information within a book? Table of contents, users' most popular choice, scored 61.0%, although the score for its exclusive use is just 17.5%. Other frequently mentioned methods of finding information were indexes, 40.1%, and skimming the entire book, 44.1%.

We found that 23.2% of users needed the book for school, read one-fourth of the book or less, and used the table of contents or book index to find information. Thus, nonfiction books seem appropriate candidates for electronic access if directed at this subgroup of users.

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Acknowledgments

In August 1985, Frederick Kilgour indicated an interest in learning about how books are used. This led to two studies, the first in a public library, and the second, reported here, in an academic library. We are indebted to Mr. Kilgour for the enthusiasm and interest he showed throughout the course of both studies.

Of course, a study involving library users at The Ohio State University could not be undertaken without the consent of William Studer, the director of University Libraries, and the cooperation of his colleagues. Special appreciation is expressed to Susan Logan and Thomas McNally for generous help in facilitating this study.

We are grateful to Martin Dillon and Michael McGill for the insights they provided in the design phase of this study. John Bunge, Martin Dillon, Sig Dierk, and Diane Vizine-Goetz reviewed an advanced draft of this report. Their criticisms were invaluable. We thank Erik Jul who in the role of editor contributed greatly to this report.

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1. Overview

As full-text databases become increasingly viable, the question of the benefits and problems of providing nonfiction books for interactive use in electronic mode arises. Authors of nonfiction books may treat their work as one logical unit, but readers of nonfiction books may read just part of a book, perhaps just a paragraph or sentence that meets a particular information need (Berelson 1949). Early experiences with full text databases show that they are effective for searching specific information or data. Because nonfiction books by definition contain factual information they may be potential candidates for adding to or serving as the basis for creating electronic information delivery systems.

Of course, offering nonfiction books for use in electronic mode presumes certain information-seeking behavior: that nonfiction books are generally read for obtaining information and tend to be read only in part. Both premises need to be examined to decide whether nonfiction books are appropriate candidates for electronic access.

A previous study, conducted in the public library environment, examined these premises (Prabha, Bunge, Rice 1987). To a large degree, the premise that nonfiction books are read for obtaining information was supported. While 91.3% of users were looking for information, 43.8% stated that they were looking for specific information. The findings also showed that two-thirds of the users did not read nonfiction books completely. Additional analyses of that study suggested that the premises regarding nonfiction books use were likely to be supported to a greater extent in a school or academic environment. To test this hypothesis, the present study was conducted at The Ohio State University, Columbus, Ohio.

The Ohio State University (OSU) Library System serves its users from twenty-four sites. In the university setting, departmental or special libraries usually have collections focused by subject (exceptions may be a browsing collection or an undergraduate library). It seems reasonable to expect that the nature of use of nonfiction books in humanistic disciplines will differ from that of scientific disciplines. Inclusion of departmental libraries in the study would not produce patterns that could be generalized to the greatest number of library users. Thus, only the Main Library, which serves the widest spectrum of users, was selected for this study. This library has a collection of 1.8 million book titles.

Nonficiton books include dictionaries, telephone directories, handbooks, maps, and much more. In libraries, dictionaries, telephone directories, and similar materials are regarded as reference books and are generally not loaned for use outside the library. However, most libraries permit their users to borrow nonfiction books which treat any given subject in some degree of depth. This category of nonfiction books was the focus of our study. Interviewees were asked to think of "information" as one or more ideas or facts.

We interviewed 426 users from February 2 through March 8, 1987. The hours of library operation were divided into two-hour time periods for cluster sampling. We randomly selected 52 interviewing slots from these two-hour time periods. Users who were returning nonfiction books for themselves during these randomly selected slots were interviewed.

Nonfiction books are clearly an important source of information: 92.0% of the users were successful in finding information, 90.9% intended to use the information within one month, and 81.9% had a specific use for the information.

The data largely support the premises under study. User responses indicate that 97.6% of the users were looking for information and 65.9% read half of the book or less. Questions on how users

selected the nonfiction book revealed that 46.5% had prior knowledge of the book, 37.8% used the library catalogs to select the book, and 15.8% browsed the shelves.

Once a nonfiction book is selected, how do users find the desired information in the book? Table of contents, users' most popular choice, scored 61.0%, although the score for its exclusive use is just 17.5%. Other frequently mentioned methods of finding information were indexes, 40.1%, and skimming the entire book, 44.1%. We sought this data so designers of full-text systems of nonfiction books can develop appropriate finding and navigational aids.

We found that 23.2% of the nonfiction book users needed the book for school, read one-fourth of the book or less, and used the table of contents or book index to find information. Thus, nonfiction books seem appropriate candidates for electronic access if directed at this subgroup of users in an academic environment.

2. Research Method

This chapter presents the research methodology. It describes the reasons for selecting the Main Library of The Ohio State University Library System, the procedure for randomizing the hours for interviewing users, and the preparation of a script for interviewing study participants. A discussion of data entry, verification, and analyses follows. Finally, limitations of the study are stated.

2.1. Library Selection

The Ohio State University Library System is a major research library with a collection of more than four million volumes. Libraries of other academic institutions in the Columbus, Ohio, area were considered, but were not selected because these libraries had smaller collections and generated less library traffic. The higher traffic pattern of The Ohio State University Library System met the requirements of collecting the maximum amount of data during one academic term.

The Ohio State University Library System serves its users from twenty-four sites. Selecting individual libraries at random could result in a group of highly specialized libraries that would fail to draw data from a broad spectrum of academic users. Furthermore, many of the library sites have such a low book return rate that it would not have been possible to interview adequate numbers of users. Therefore, only the Main Library at the Columbus campus was selected. In principle, the Main Library has the widest spectrum of users and the highest book return rate, ensuring a wide variety and large number of users.

2.2. Data Collection

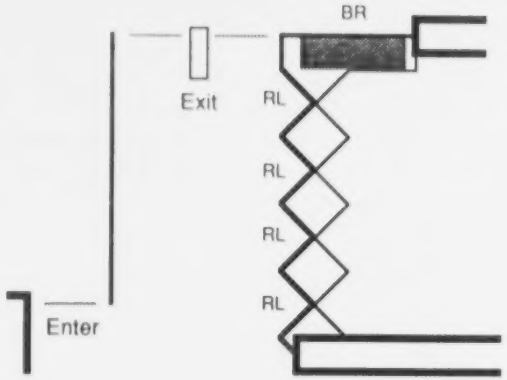
The researchers chose a face-to-face interview method for collecting data because this method reduces misinterpretations of the survey questions by the respondents and the interviewee responses by the data collector. With each interviewee, the interviewer used a modified version of the script developed for an earlier study (Prabha, Bunge, Rice 1987). During the interview, users were allowed to see the script as the interviewer read each question aloud. This approach increased the interviewee's attention and reduced the interviewing time. The complete interview script is given in Appendix A.

The Site Data Form for the Main Library (fig. 1) was designed to provide important background data. On each library visit, the following information was collected: date, initials of interviewers, beginning and ending time of library visits, number of persons leaving the library (electronic counters mounted at the exit gate provided this number), number of persons missed (that is, persons who were apparently returning books but were not approached for interviews), and the number of persons who declined to participate.

The Site Data Form shows the physical layout of the area designated for returning library materials. Users returned books at any of four circulation counters or at the book drop area. On each library visit, one interviewer covered the book drop area and the remaining interviewers covered the circulation counters.

Book-Use Survey

Site Data Form
Main Library



Interviewer(s) CP DAB DC

Date 2 / 2

Location BR RL

Begin Time 6:00

End Time 8:00

	tally	number
Refusals		0
Missed		2

Counter: end 73022 − begin 72541 = 481

Notes:

Not Returning for Self	1
NoNonfiction Books	1
Full Interviews	3
Sequence Numbers	001-003

Figure 1. Site Data Form

In an ideal research setting, it would be possible to count the potential subjects missed by the interviewers. In the current study, keeping an exact count of users the data collectors missed posed a problem because there were fewer interviewers than book return lines. Consequently, it was decided to add a person to count the number of potential subjects missed. However, it was not possible to cover every randomly assigned time slot. The total number of missed subjects was estimated from data collected during ten representative collection periods (see Appendix B).

Interviewers approached library users who were returning books and invited them to participate in the study. If they consented to be interviewed, two further questions screened potential participants:

1. Was the person returning books for him/herself?
2. Was the person returning at least one nonfiction book?

The purpose of the former was to select those users best able to discuss the use of the book. To provide the most accurate information, the questions centered on the one book the user remembered best. Allowing users to select a particular book for answering interview questions is a variant of the critical incident method (Martyn and Lancaster 1981). A potential problem with this selection method is that users are likely to select the book of which they had read most. A future study could perhaps estimate this bias. This is an issue of tradeoff of increased accuracy of response versus a biased estimate. In our present study, this would tend to overestimate the proportion of books users read. Given that we were interested in ascertaining whether users were reading just part of the book and, if so, how much, our method of letting users select a book provides a conservative estimate. Therefore, estimates of the proportion of the book read may be higher than the true average for a randomly selected book.

2.2.1. Interview Script Design

A modified version of the interview script developed for the public library study was tested during January 1987. After several iterations of testing and revising the script, the final version contained twenty-five questions that:

- Screened users for the study (to qualify for interviewing, users had to be returning nonfiction books they had borrowed for their own use) (questions 1 and 2)
- Facilitated use of the critical incident method (if users were returning more than one nonfiction book, they were asked to answer the questions with reference to the nonfiction book they best remembered using (question 3)
- Obtained data on the subject content of the book (questions 4 and 5)
- Determined how users had selected the book (questions 6 through 11)
- Asked how much of the book the user read (and reasons for not reading the entire book, if applicable), whether the user found the needed information, whether this information was in one section or more than one section of the book, and whether the sections were together or apart (questions 14 through 19)
- Collected data pertaining to factors that could influence how much of a book is read, including why users were seeking information, in what context (e.g., school or home) the users planned to use the information, whether the users had a specific use for the information, how soon the users planned to use the information, and whether the users were looking for specific information (questions 12, 13, 20, 21, 23)
- Inquired what features of the book were used to find the needed information (question 24)
- Gathered data on users' student or professional status in the university (question 25)

2.2.2. Sampling Scheme

The study included only those people who had actually checked nonfiction books out of the library. Since the population of users returning nonfiction books is ever-changing and unknown, researchers used a cluster sampling method. Cluster sampling selects at random several groups, or "clusters," of eligible interviewees from a defined population of clusters and uses every member within the cluster.

In this study, clusters were two-hour blocks of time during which the library was open. Ideally, each member of the cluster was to be interviewed.

2.2.3. Randomization of Library Visits

Based on observations of traffic patterns during a pretest period, it was determined that about 45 clusters would be required to ensure an adequate number of interviews. Each cluster would, on average, yield two or three interviews. Data collectors' schedule conflicts eliminated 5 of the 54 available weekly clusters.

The remaining clusters used in the randomization process yielded 52 clusters over a five-week period. See Appendix C for the randomizing algorithm. An academic term at The Ohio State University is ten weeks, but we excluded the first three weeks and the two last weeks. We reasoned that in the earlier weeks students and staff were getting accustomed to a new schedule, while during the last weeks many users generally returned books in a hurry because of final exam pressures. For each library visit at least two interviewers were assigned. Three interviewers were assigned to time slots with heavy traffic volume.

2.3. Data Entry and Verification

All data from the 426 full interviews, including verbal responses to open-ended questions, were entered on an IBM 4381 mainframe and later analyzed using the Statistical Analysis System (SAS), version 5.16. A computer listing of the data was compared to the responses recorded on the data collection forms. This process involved two of the researchers working together. One read aloud the responses from the computer listing while the other checked them against the recorded responses on the data collection forms. Any errors detected were marked and corrected. This checking determined whether errors had occurred during the initial data recording or subsequent data entry. Data entry errors were negligible and corrected.

Data recording errors were classified as instances when the interviewer failed to collect data for a particular question. These data were treated as missing and distinguished from nonresponses that resulted from the skipping patterns in the questionnaire.

A major instance of data recording error occurred because one interviewer misinterpreted the flow pattern of the questionnaire. Question 6, which asked "Did you have prior knowledge of this book?," had a "yes" or "no" answer. Those who answered yes were asked to describe in an open-ended way how they learned about the book. One interviewer did not notice the existence of the open-ended question until after the interviewing process was complete. For the open ended part of this question, 32.0% of possible responses were lost.

Some other errors were committed by all interviewers. For example, question 3 required the interviewer to record the number of books the user was returning to the library. The interviewers missed 2.3% of these responses. During data analysis, a minimum of one book returned was assumed for these cases. For question 5, the interviewer was to record the book call number, but 4.7% of these responses was missing. Other questions with high data recording errors were question 9 (7.4%) and question 11 (24.6%).

All the verbal responses to each of the open-ended questions were grouped alphabetically under each question by the computer. This arrangement made it easier to recognize similar responses for the same question. Comment codes were then assigned to groups of similar responses. These comment codes were added to the database, and further analysis on the grouped, open-ended responses was conducted.

Other data from the Site Date Form such as number of persons missed by the interviewers and number of persons declining to participate were entered into the computer and analyzed.

2.4. Data Analyses

Although most of the findings are presented in plain percentages, analyses of the questions were not straightforward because the data collectors asked several types of questions. Some questions permitted single answers, some allowed multiple answers and ranking, and some were open-ended. Furthermore, while skip patterns were essential for handling some of the anticipated contingencies, the result of branching through the interview questions required that responses to certain questions be combined to maintain logical unity of thought. For example, questions 6 and 8 represent one logical unit because both attempt to determine how a person learned about or selected a particular book. On the other hand, although questions 7 and 10 were identical, question 7 was aimed at users who had prior knowledge of the book, but question 10 was aimed at users who selected the book at the shelves.

Data from the transaction log files of the library's computer system were obtained and analyzed to verify the number of potential interviewees missed by data collectors. However, this transaction log data included discharges arising from interlibrary loan and other discharges not returned by walk-in users. For instance, overflow of books returned during peak hours were discharged during nonpeak hours. Transaction log data did not serve our purpose. Again, the percentage of users returning nonfiction books for themselves could not be estimated from the number of all users leaving the library, which had been recorded. Analysis of questions allowing ranked answers proved difficult and yielded few significant patterns. However, ranking data on book features used to locate specific information did show clear user preferences.

2.5. Limitations of the Study

This study focuses on the use of nonfiction books checked out for use away from the library at a time and place convenient for the borrower. Those who use nonfiction books on library premises may more likely consult or read shorter sections of a book and, perhaps, for different reasons. Noncirculating books may also have different use patterns.

3. Nonfiction Book Use

This chapter presents the findings that pertain to the two premises of this study: (1) nonfiction books are generally read for obtaining information and (2) nonfiction books are generally read in part. Reasons why users read nonfiction books and reasons for reading them in part are given. The next section shows that users do not read nonfiction books in a linear or sequential pattern, but skip or scan. This is followed by the features of the book used for finding information. Finally, factors that may affect nonfiction book use are explored.

3.1. Participant Selection

As noted, data were collected at the Main Library of The Ohio State University during the five-week period February 2 through March 8, 1987. Data collectors approached 797 potential subjects. We estimated that we missed 156 subjects (Appendix B). In other words, we had a total of 953 potential subjects (fig. 2).

Of those users approached by data collectors, 81.7% consented to participate in this study. However, 8.8% of these were not returning books for themselves and were disqualified. Of the remaining, 19.4% were disqualified because they were not returning nonfiction books. Finally, another 11.1% were disqualified for various other reasons.

Some subjects were disqualified because they did not distinguish a bound journal from a book. In some instances the term *nonfiction* posed a problem. Even though some users answered in the affirmative to the screening questions, we recognized during the course of the interview that the particular book the user selected was indeed fiction. Another unanticipated difficulty arose when some subjects did not know or were unable to recall anything about the books even in a general way. These users were unable to select the book they remembered best.

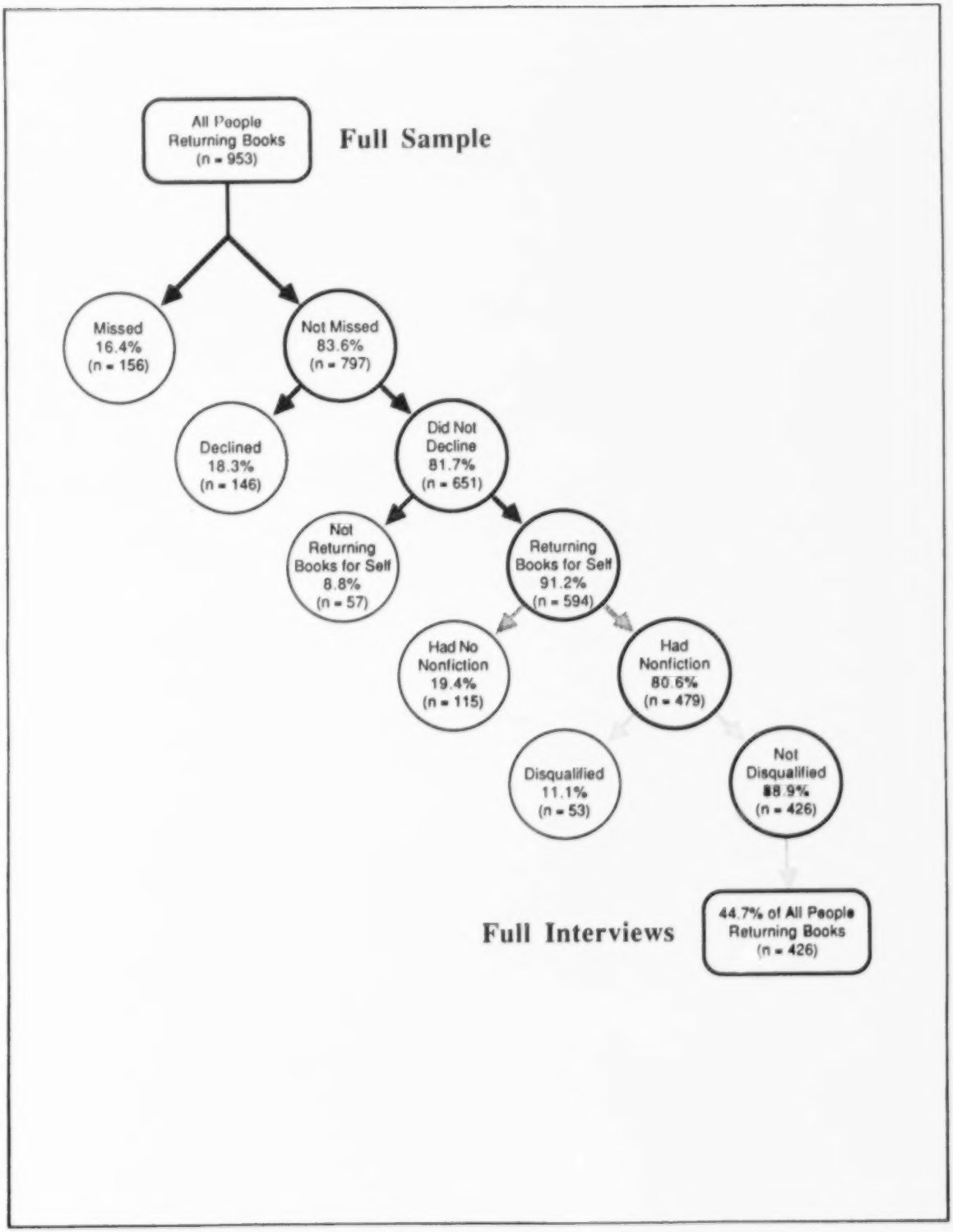

All People Returning Books (n = 953)
Full Sample
Missed 16.4% (n = 156)
Not Missed 83.6% (n = 797)
Declined 18.3% (n = 146)
Did Not Decline 81.7% (n = 651)
Not Returning Books for Self 8.8% (n = 57)
Returning Books for Self 91.2% (n = 594)
Had No Nonfiction 19.4% (n = 115)
Had Nonfiction 80.6% (n = 479)
Disqualified 11.1% (n = 53)
Not Disqualified 88.9% (n = 426)
Full Interviews
44.7% of All People Returning Books (n = 426)

Figure 2. Full Sample

3.1.1. Participant Profile

In all, 426 users participated in the study. Most of these, 44.7%, were undergraduate students; graduate students formed the next largest group, 38.6%; faculty comprised 10.4%; continuing education students, staff, and others contributed to the remaining 6.5%.

This distribution confirms what researchers suspected. Although one may assume that the Main Library serves primarily graduate students and faculty, it also serves many undergraduates even though the Library System at The Ohio State University has a separate library to serve undergraduates. Figure 3 shows a breakdown of undergraduates by class.

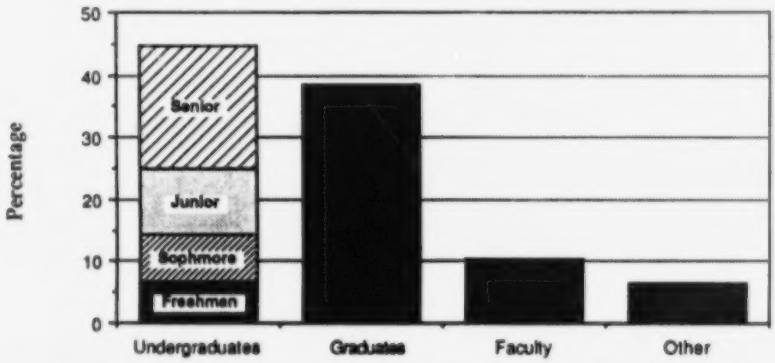


Figure 3. Nonfiction Book Users at the Main Library

3.2. Premises of Electronic Information Systems

This section presents the core findings of this study that pertain to the two premises of nonfiction book use. The purposes for which users generally seek nonfiction books and their reasons for not reading books completely are discussed.

3.2.1. Nonfiction Books Are Generally Read for Obtaining Information

Nonfiction books, unlike fiction, need not be read completely. It is this practice of referring to information in any part of a nonfiction books that makes providing access to the full text of nonfiction books attractive, especially if users can search more quickly for specific information using a full-text database than they can with a conventional book. But are nonfiction books used primarily to obtain information, and if so, is the information specific?

Interviewees were asked to think of information as one or more ideas or facts. Collecting data was not straightforward. Asking subjects whether they read nonfiction books to obtaining information is not only awkward but also likely to produce little useful data. One possibility is to ask whether they were looking for specific information. However, our experience in the previous study showed that this tends greatly to underestimate the percentage of users who are actually looking for specific information. Therefore, we sought data in indirect ways. The question, "Did the book contain the information you were looking for?" gave users three choices: "yes"; "no, wasn't in the book"; "no, wasn't looking for information." An overwhelming majority, 97.6%, were looking for information; just 2.4% of the users stated that they were not looking for information (table 1).

Researchers attempted to learn what percentage of users viewed the information they sought as "specific." Users were asked first to describe the information they needed in their own words to help them focus on the information they sought (question 22). They were then asked whether they regarded this information as specific (question 23). Of the 331 users who answered this pair of questions, 75.2% said the information was specific (table 2).

Table 1. Nonfiction Book Use: Finding Information

Responses	(%) n=411
Book contained needed information	92.0
Book did not contain needed information	5.6
Not looking for information	2.4
Total	100.0

Table 2. Specificity of Information Sought

Specificity	(%) n=331
Specific	75.2
General	24.2
Total	99.4

3.2.2. Nonfiction Books Are Generally Read in Part

The inclusion of nonfiction books in electronic information systems assumes that users generally do not read nonfiction books completely. User responses to the question "How much of the book did you read?" indicate that 46.2% read one-fourth of the book or less, 65.9% read half the book or less, and 73.6% read three-fourths of the book or less (table 3). Stated another way, nearly half the users interviewed read less than one-fourth of the book and two-thirds read about half of the book or less. These findings support the premise that users generally read nonfiction books in part.

Table 3. Amount of Book Read

Amount Read	(%) n=426
None of the book	3.5
Less than $\frac{1}{4}$ of the book	24.9
About $\frac{1}{4}$ of the book	17.8
About $\frac{1}{2}$ of the book	19.7
About $\frac{3}{4}$ of the book	7.7
Almost all of the book	7.0
All of the book	19.2
Total	99.8

3.2.3. Reasons for Reading a Nonfiction Book

To gain a broader perspective of users' responses to questions relating to the premises of this study, users were asked to describe why they read the particular nonfiction book (table 4). Because most of the interviewees were students, report writing was the most frequent use mentioned by nearly half the interviewees. However, not all reading is school directed.

3.2.4. Reasons for Reading Just Part of a Book

When asked to describe the amount of book read, users were given seven choices (question 14). The sixth choice, "almost all of the book," provided a category for those users who may not have read

Table 4. Purposes Prompting Information Search

Purpose	(%) n=426
Paper, report, presentation	49.8
Personal interest	18.5
Class or course reading	17.1
Thesis, dissertation, or general exams	8.2
Teaching or planning a course	6.3
Total	99.9

all of the book (choice seven) in a literal sense. With regard to the premise that nonfiction books are generally read in part, users' responses to these two choices should be combined into one. The subsequent branching pattern of this question in the data collection process groups these two choices.

Users who read three-fourths of a book or less were asked why they did not read the rest of the book (question 16). Most frequently cited reasons were "not pertinent," 28.4%, and "did not need," 28.1% (table 5). If "did not need" is interpreted as another way of expressing "not pertinent," it is clear that relevance judgments alone contribute to greater than half the reasons for reading just part of a book. Two other reasons, "not required" and "changed my topic," appear on this list perhaps because a majority of the interviewees were students.

Table 5. Reasons for Reading Books in Part

Reason	(%) n=299
Was not pertinent	28.4
Did not need	28.1
Ran out of time	12.7
Found what I wanted	9.0
Did not like	4.3
Book was due	3.0
Looked for just specific information	2.7
Did not have what I needed	2.7
Not required	1.7
Already knew information in rest	1.3
Acquired another copy	1.3
Renewing	1.0
Skimmed the rest	1.0
Reading other books	1.0
Changed my topic	0.7
Other	1.0
Total	99.9

3.3. Navigating Through a Nonfiction Book

Given that the findings of this study and of two recent related studies (Sabine and Sabine 1986, Gates 1987) support in some measure the inclusion of nonfiction books in full-text databases, further questions arise. Can a user who reads one-fourth of a book or less be viewed as a potential user of nonfiction books in electronic mode? Do users who read short sections of a book read the text sequentially? Or, do users browse and skip text to find information relevant to their needs? Such skipping or scanning through text has implications for determining the depth of indexing and facility

for scanning textual information that should be provided by electronic document systems. Questions 18 and 19 attempted to obtain data on scatter of sought information.

Question 18, "Was the information you needed...," gave users three choices: (1) in one part of the book, (2) in different parts of the book, and (3) in all parts of the book. Those who selected the second choice were then asked whether these parts were together or apart (question 19). This question was inserted because of the ambiguity in the phrasing "in different parts of the book." Some users might interpret different sections of a chapter as being different parts even though the textual material consulted may be scanned in sequential order. The response "together" was combined with "one part of the book." We were interested in ascertaining the extent of skipping or scanning used to obtain the needed information.

In all, 29.4% of the users found the information in one part of the book. This includes 3.7% of the users who stated that the information was in different parts of the book, but that the parts were together. While 30.2% of the users found information in all parts of the book, the largest group of users, 40.5%, said that the information they sought was in different parts of the book.

How does skipping or scanning for information in a book relate to the two premises of this study? To take the first premise, do users who look for specific information report less skipping or scanning than those who read for general information? The percentage of users reporting that the needed information was in one part is slightly higher for those who were looking for specific information than the corresponding percentage for those looking for general information (table 6). Because of the skip patterns in the interview script, 119 respondents were not asked about the specificity of the information. As might be expected, the trend of these percentages of scatter of information reverses for "all parts of the book."

Table 6. Scatter of Information by Specificity

	Specificity of Information		
Scatter	Specific (%) n=230	General (%) n=77	Total (%) n=307
One part of the book	33.0	29.9	32.2
Different parts of the book	43.5	39.0	42.3
All parts of the book	23.5	31.2	25.4
Total	100.0	100.1	99.9

$\chi^2 = 1.801$; $P = 0.406$; 2 DF

A cross tabulation of how much of the books users read and the extent of scatter of information shows what one may expect: users who read less tend to report less scatter of sought information (table 7). Of those who reported that the sought information was in one-part, 68.4% read one-fourth of the book or less. On the other hand, of those who reported that the information was scattered in all parts of the book, more than half read "almost all" or "all of the book." Users looking for specific information are more likely to be read less than one-fourth of a book, and also are likely to find information in one part of the book (table 8). Whereas 73.7% of users who were looking for specific information read one-fourth of the book, 56.5% of the users looking for general information read one-fourth of the book or less.

3.4. Factors Affecting Nonfiction Book Use

We speculated about factors that could affect how much of a book users read and how information is located in a book. Specificity, immediacy, and context of use were considered probable factors, as was student or professional status. Findings pertaining to these factors and book features users selected for finding information are presented in this section.

Table 7. Amount Read and Scatter of Information

Amount Read	Scatter of Information: One Part (%) n=111	Different Parts (%) n=153	All Parts (%) n=114	Total (%) n=378
Less than $\frac{1}{4}$ of the book	41.4	22.2	10.5	24.3
About $\frac{1}{4}$ of the book	27.0	20.9	7.0	18.5
About $\frac{1}{2}$ of the book	19.8	28.1	14.9	21.7
About $\frac{3}{4}$ of the book	3.6	9.2	12.3	8.5
Almost all of the book	2.7	6.5	11.4	6.9
All of the book	5.4	13.1	43.9	20.1
Total	99.9	100.0	100.0	100.0

Table 8. Amount Read and Scatter of Information by Part of Book

Amount Read	Scatter of Information: One Part (%)	Different Parts (%)	All Parts (%)	Total (%)
Specific Information	n=76	n=100	n=54	n=230
Less than $\frac{1}{4}$ of the book	46.1	22.0	14.8	28.3
About $\frac{1}{4}$ of the book	27.6	18.0	7.4	18.7
About $\frac{1}{2}$ of the book	19.7	31.0	11.1	22.6
About $\frac{3}{4}$ of the book	0.0	9.0	13.0	7.0
Almost all of the book	1.3	6.0	13.0	6.1
All of the book	5.3	14.0	40.7	17.4
Total	100.0	100.0	100.0	100.1
General Information	n=23	n=30	n=24	n=77
Less than $\frac{1}{4}$ of the book	30.4	16.7	8.3	18.2
About $\frac{1}{4}$ of the book	26.1	33.3	8.3	23.4
About $\frac{1}{2}$ of the book	26.1	16.7	8.3	16.9
About $\frac{3}{4}$ of the book	8.7	13.3	8.3	10.4
Almost all of the book	0.0	0.0	8.3	2.6
All of the book	8.7	20.0	58.3	28.6
Total	100.0	100.0	99.8	100.1

3.4.1. Specificity of Use

A majority of users, 81.2%, reported having specific use for the information. It seems reasonable to suppose that users who have a specific use for the information are more likely to focus their reading than those users who do not have a specific use. In fact, 45.2% of those who claimed that they had specific use read about one-fourth of the book or less. The comparable percentage for those not reporting specific use is 31.5%. As might be expected, this trend is reversed for "almost all of the book" and "all of the book" (table 9).

3.4.2. Immediacy of Use

Does how soon a user needs information influence the approach to reading? Only those users who mentioned a specific use for the information were asked when they expected to use the information.

Table 9. Amount Read by Specific Use

Amount Read	Specific Use: Yes (%) n=307	Specific Use: No (%) n=70	Total* (%) n=378
Less than $\frac{1}{4}$ of the book	25.7	18.6	24.3
About $\frac{1}{4}$ of the book	19.5	12.9	18.5
About $\frac{1}{2}$ of the book	21.2	24.3	21.7
About $\frac{3}{4}$ of the book	8.1	10.0	8.5
Almost all of the book	5.2	14.3	6.9
All of the book	20.2	20.0	20.1
Total	99.9	100.1	100.0

$\chi^2 = 4.686$; $P = 0.096$; 2 DF

* Total reflects missing data.

Users reported the following: 67.9% had used the information already; 11.0% intended to use the information within one week; 11.7%, within one month; 9.1%, within six months or longer. A cross tabulation of these figures is shown in table 10.

Table 10. Amount Read by Immediacy of Use

Amount Read	Immediacy of Use: Used Already (%) n=209	Within 1 Week (%) n=34	Within 1 Month (%) n=36	Within 6 Months or Longer (%) n=28	Total* (%) n=308
Less than $\frac{1}{4}$ of the book	24.4	50.0	13.9	21.4	25.6
About $\frac{1}{4}$ of the book	21.1	17.6	19.4	10.7	19.8
About $\frac{1}{2}$ of the book	19.1	23.5	30.6	21.4	21.1
About $\frac{3}{4}$ of the book	10.0	0.0	5.6	7.1	8.1
Almost all of the book	4.3	2.9	8.3	10.7	5.2
All of the book	21.1	5.9	22.2	28.6	20.1
Total	100.0	99.9	100.0	99.9	99.9

* Total reflects missing data.

3.4.3. Context of Use

To recall, the term "context" in the present study refers to the environments (i.e., school, business, home, or personal) that occasioned the need for information. How much of a book a user reads could possibly be influenced by whether the user intends to use the information in the context of school or other contexts. Question 11, which sought data on the context in which the nonfiction book was used, allowed multiple answers. Given that we collected data in the university setting, it was natural that the majority of users, 70.1%, reported use in the context of school. The remaining responses were distributed as follows: business, 2.6%; personal, 20.0%; in two contexts 6.3%. Just one user reported use in the context of home; three users reported use of information in more than two contexts. In reporting these data, it was decided to combine the personal and home categories. Likewise, uses of information in more than two contexts were combined with uses in two contexts.

Clearly, greater than half of those who read the book for school or business, 52.5%, read about one-fourth of the book or less (table 11). In fact, 71.9% read half of the book or less. Comparable

Table 11. Amount Read by Context of Use

Amount Read	Context of Use: School/Business (%) n=322	Context of Use: Home/Personal (%) n=88	Total (%) n=410
About $\frac{1}{4}$ of the book or less	52.5	26.1	46.8
About $\frac{1}{2}$ to $\frac{3}{4}$ of the book	26.4	29.5	27.1
Almost all to all of the book	21.1	44.3	26.1
Total	100.0	99.9	100.0

$\chi^2 = 24.8$; $P = 0.00$; 2 DF

percentages for the two other contexts, business and personal, are 36.4%, and 25.9%. Even though the distinction between these contexts blur in a university setting, users who read for business reasons seem to read more of a book than those who read for school.

The extent of skipping or scanning a nonfiction book to find information seems to correlate with whether users are reading a book for school or personal reasons (table 12). The categories "school" and "business" were combined for chi square tests. Further statistical tests may show whether users reading nonfiction books for school tend to report that the information needed was in one part of the book more often than users reading for personal reasons. Data suggest that users reading for school more often report a more specific use for the information than other users (table 13).

Table 12. Context of Use and Scatter of Information

Context of Use	Scatter of Information: One Part (%) n=95	Different Parts (%) n=159	All Parts (%) n=110	Total (%) n=364
School/Business	89.5	87.4	60.0	79.7
Home/Personal	10.5	12.6	40.0	20.3
Total	100.0	100.0	100.0	100.0

$\chi^2 = 37.8$; $P = 0.00$; 2 DF

Table 13. Context of Use by Specific Use

Context of Use	Specific Use: Yes (%) n=293	No (%) n=70	Total (%) n=363
School/Business	89.1	41.4	79.9
Home/Personal	10.9	58.6	20.1
Total	100.0	100.0	100.0

$\chi^2 = 79.8$; $P = 0.00$; 1 DF

Context of use also seems to influence how users select books (table 14). Exploratory chi square tests suggest that users selecting a book for school use tend to select it more frequently using the online catalog than by either shelf browsing or relying on prior knowledge. Users reading for personal reasons tend to select books at the shelf.

Table 14. Context of Use by User Category

	User Category			
Context of Use	Specific-item Users (%) n=189	Catalog Users (%) n=155	Browsers (%) n=64	Total (%) n=408
School/Business	76.7	85.2	67.2	78.4
Home/Personal	23.3	14.8	32.8	21.6
Total	100.0	100.0	100.0	100.0

$\chi^2 = 9.2$; $P = 0.01$; 2 DF

3.4.4. Student or Professional Status

A cross tabulation of the status of users and the amount of book read shows that undergraduates, 56.9%, are most likely to read one-fourth of book or less (table 15). In comparison, 44.5% of graduate students and 27.3% of the faculty read one-fourth of the book or less.

Table 15. Amount Read by Student/Professional Status

	Status				
Amount Read	Undergraduates (%) n=190	Graduate Students (%) n=164	Faculty (%) n=44	Others (%) n=28	Total (%) n=426
None of the book	3.7	4.9	0.0	0.0	3.5
Less than $\frac{1}{4}$ of the book	27.9	26.2	15.9	10.7	24.9
About $\frac{1}{4}$ of the book	25.3	13.4	11.4	3.6	17.8
About $\frac{1}{2}$ of the book	17.4	20.7	20.5	28.6	19.7
About $\frac{3}{4}$ of the book	7.0	8.5	2.3	10.7	7.7
Almost all of the book	5.8	4.9	20.5	7.1	7.0
All of the book	12.1	21.3	29.5	39.3	19.2
Total	100.1	99.9	100.1	100.0	99.8

3.4.5. Features Used to Find Information

Having selected a book, what features of a book do users tend to use for finding the information they need? Question 24, which attempted to determine this, gave users seven choices and allowed multiple responses: (1) table of contents, (2) book index, (3) preface, (4) tables, charts, and diagrams, (5) photographs or sketches, (6) entire book, and (7) other features. Users who selected more than one feature were asked to rank their choices. Overall percentages of users' answers to this question are shown in the context of user responses to question 23, which asked whether users were looking for specific or general information (table 16).

Table of contents, users' most popular choice, scored 61.0%, although the score for its exclusive use is just 17.5%. Other frequently mentioned methods of finding information were indexes, 40.1%, and skimming the entire book, 44.1%. Use of illustrative matter was low: tables, charts, and diagrams, 7.6%, and photographs or sketches, 3.9%. How users ranked the three most popular features is shown in table 17. Table of contents is not only the most frequently used feature, but also the most highly ranked.

A significant relationship was observed between the context in which users sought information and the features used for finding the information. To recall, question 24 had seven choices. Responses to four of these choices (preface; tables, charts, and diagrams; photographs or sketches; and other) were

Table 16. Features Used to Find Information by Specificity

Feature	Specificity of Information: Specific (%) n=249	General (%) n=80	Total* (%) n=331
Table of contents			
Used exclusively	13.9	3.6	17.5
Used with other methods	33.2	10.3	43.5
Total	47.1	13.9	61.0
Book index			
Used exclusively	6.0	0.9	6.9
Used with other methods	25.1	8.2	33.2
Total	31.1	9.1	40.1
Preface			
Used exclusively	0.6	0.0	0.6
Used with other methods	7.6	3.3	10.9
Total	8.2	3.3	11.5
Tables, charts, and diagrams			
Used exclusively	0.3	0.0	0.3
Used with other methods	5.7	1.5	7.3
Total	6.0	1.5	7.6
Photographs or sketches			
Used exclusively	0.0	0.0	0.0
Used with other methods	3.6	0.3	3.9
Total	3.6	0.3	3.9
Entire book			
Used exclusively	14.5	6.3	21.1
Used with other methods	17.8	5.1	23.0
Total	32.3	11.4	44.1
Other			
Used exclusively	2.1	1.2	3.3
Used with other methods	2.4	0.9	3.3
Total	4.5	2.1	6.6

* Total reflects missing data.

Table 17. Methods of Finding Information by Rank

Method	Rank: 1st (%)	2nd (%)	3rd (%)	>3rd (%)	Total* n=331 (%)
Table of contents	40.8	16.3	1.8	0.3	59.2
Book index	21.1	13.3	2.4	1.5	38.3
Entire book	27.5	9.7	4.5	1.2	42.9

* Total reflects missing data.

combined to apply chi square test of independence. Users who seek information for school are more likely to use table of contents or book indexes while those who seek information for personal reasons are more likely to look at the entire book to find specific information (table 18).

Table 18. Methods of Finding Specific Information by Context of Use

	Methods			
Context of Use	Table of Contents Index (%) n=194	Entire Book (%) n=87	Other (%) n=27	Total (%) n=308
School/Business	91.2	80.5	100.0	89.0
Home/Personal	8.8	19.5	0.0	11.0
Total	100.0	100.0	100.0	100.0

$\chi^2 = 10.7$; $P = 0.005$; 2 DF

4. Nonfiction Book Users

Findings pertaining to three groups of users, those who knew about a book before coming to the library (specific-item users), those who selected a book at the catalog, and those who selected a book at the shelves, are presented in the first two sections. This is followed by analyses of subject dispersion of information needs. In the final section, findings of this study are compared with those of related studies.

4.1. Three Categories of Users

In a study of how library users use nonfiction books, the question of how they learn about or select a particular nonfiction book naturally arises. Users' answers to how they learned about the book they borrowed (questions 6 and 8) fall into three groups:

1. 46.2% knew about the book before coming to the library (specific-item users)
2. 37.6% selected the book at the online catalog (catalog users)
3. 15.7% selected the book at the book shelves (shelf browsers)

Of the remaining, less than 1.0% used the card catalog. Clearly, at the site of this study, users have accepted the Library Control System (LCS) online catalog as the norm.

There appears to be a significant relationship between how users select a particular nonfiction book and the amount of book read (table 19). To apply chi square test, the amount read was collapsed into three categories: about one-fourth or less than one-fourth of a book, about half to three-fourths of a book, and almost all and all. Of users who selected nonfiction books at the catalog, 58.8% read one-fourth of the book or less. The comparable percentages for the other two groups, specific-item users and shelf browsers, are 36.0% and 46.3%, respectively.

An exploratory chi square test on the three groups and the context that occasioned the information need shows some relationship. Users who need information for school or business are more likely to select the book at the catalog than users who seek information for personal reasons (table 20).

An examination of whether the reasons for reading nonfiction books relate to the categories of users shows that, for report, paper, or presentation writing, more than two-thirds tend to select the book at the catalog (table 21). Books that students read for class, not report writing, are more likely to be assigned or suggested by the instructor. Those who read for personal interest tend to select the book at the shelves. Certain characteristics of these groups are presented in the following section.

Table 19. Amount Read by User Category

Amount Read	User Category: Specific-item Users (%) n=197	Catalog Users (%) n=160	Browsers (%) n=67	Total* (%) n=426
None to about $\frac{1}{2}$ of the book	36.0	58.8	46.3	46.2
About $\frac{1}{2}$ to $\frac{3}{4}$ of the book	24.4	30.0	29.9	27.4
Almost all to all of the book	39.6	11.3	23.9	26.4
Total	100.0	100.1	100.1	100.0

$\chi^2 = 38.1$; $P = 0.00$; 4 DF
* Total reflects missing data.

Table 20. Purported Use by User Category

Use	User Category: Specific-item Users (%) n=189	Catalog Users (%) n=155	Browsers (%) n=64	Total* (%) n=408
School	76.7	85.2	67.2	78.4
Personal	23.3	14.8	32.8	21.6
Total	100.0	100.0	100.0	100.0

$\chi^2 = 9.2$; $P = 0.01$; 2 DF
* Total reflects missing data.

Table 21. Purposes Prompting Information Search by User Category

Purpose	User Category: Specific-item Users (%) n=197	Catalog Users (%) n=160	Browsers (%) n=67	Total (%) n=426
Report, paper, presentation	37.6	69.4	38.8	49.8
Personal interest	19.3	13.1	29.9	18.5
Class or course reading	21.8	13.1	11.9	17.1
Thesis, dissertation, or general exams	13.7	1.3	9.0	8.2
Teaching or planning a course	7.6	3.1	10.4	6.3
Total	100.0	100.0	100.0	99.9

$\chi^2 = 53.5$; $P = 0.00$; 8 DF

4.1.1. Specific-item Users

More than half of all users who had prior knowledge of the book were graduate students (table 22). A contributing factor is that many graduate students read books recommended by faculty (table 23). Nearly 30.0% of all users said that the particular book was referenced in another source (book or journal), and nearly 16.0% said that the book was required reading. A breakdown of users' answers by affiliation in the university shows that faculty are more likely than students to learn about a book from another bibliographic source; undergraduates are more likely than graduate students to read a book because it is required reading. Neither undergraduates nor graduate students mentioned learning about a book because of familiarity with the subject areas.

Table 22. Student/Professional Status by User Category

Status	User Category: Specific-item Users (%) n=197	Catalog Users (%) n=160	Browsers (%) n=67	Total* (%) n=426
Undergraduate	24.4	65.0	55.2	44.6
Graduate student	51.8	26.3	28.4	38.5
Faculty	15.2	4.4	10.4	10.3
Other	8.6	4.4	4.5	6.3
Total	100.0	100.1	98.5	99.7

$\chi^2 = 64.7$; $P = 0.00$; 6 DF

* Total reflects missing data.

Table 23. How Specific-item Users Learned of Book by Student/Professional Status

Method	Student/Professional Status: Undergraduates (%) n=29	Graduate Students (%) n=72	Faculty (%) n=22	Othesr (%) n=11	Total (%) n=134
Referred by another source	13.8	30.6	54.5	18.2	29.9
Required reading for class	24.1	19.4	0.0	0.0	15.7
Recommended by professor	13.8	20.8	0.0	9.1	14.9
Used book before	17.2	11.1	13.6	0.0	11.9
Recommended by friend	10.3	5.6	0.0	18.2	6.7
Familiar with subject area	0.0	0.0	22.7	27.3	6.0
Part of series	0.0	5.6	0.0	0.0	3.0
Know the author	3.4	1.4	4.5	9.1	3.0
Professional or social group	3.4	1.4	0.0	9.1	2.2
Other	13.8	4.2	4.5	9.1	6.7
Total	99.8	100.1	99.8	100.1	100.0

As noted, one of the interviewers consistently failed to ask how users learned about the book. Consequently, 32.0% of the data for the open ended question were missing. Since this high percentage of missing data may distort the findings, the percentages reported are calculated using the data available on the remaining 134 users.

Specific-item users were asked how they located the particular book on the library shelves. A majority of these users, 63.5%, used the Library Control System (LCS) online catalog; another 2.5%, the card catalog (table 24). Only 1.0% of users asked library staff for assistance.

4.1.2. Catalog Users

Catalog users may be viewed as three distinct groups: those who selected the book at the catalog, 37.5%; those who obtained the call number of specific book, 29.3%; and those who obtained Library of Congress class numbers that covered the subject area of interest, 7.2%. Nearly three-fourths of all users in the study used the online catalog; about two-thirds of the catalog users were undergraduates (table 22).

When catalog users were asked what access points they used for searching the catalog, a majority, 79.4%, said that they searched by subject (table 25). The remaining users were distributed as follows: author name, 5.0%; title of the book, 3.8%; other, 1.3%; and, combination of the any of the above, 4.4%.

Table 24. Shelf Location Methods by Specific-item Users

Method	Specific-item Users (%) n=197
LCS	63.5
Card catalog	2.5
Knew from previous visits	12.7
Asked library staff	1.0
Other method	9.1
Combination of methods	10.2
Not recorded	1.0
Total	100.0

Table 25. Access Points Used by Catalog Users

Method	Catalog Users (%) n=160
Author	5.0
Title	3.8
Subject	79.4
Other method	1.3
Combination of methods	4.4
Not recorded	6.3
Total	100.2

Catalog users are more likely to report skipping or scanning for needed information than specific-item users or shelf browsers (table 26). The reasons for this phenomenon, however, are unclear. It was noted that catalog users tend to be undergraduates. An analysis of why users read nonfiction books showed half read for report writing; most citing this reason were undergraduates. Perhaps it is the process of selecting pertinent information for preparing a report that results in skipping and scanning of text.

Table 26. Scatter of Information by User Category

	User Category			
Scatter	Specific-item Users (%) n=181	Catalog Users (%) n=136	Browsers (%) n=59	Total* (%) n=378
One part of book	28.2	30.9	30.5	29.4
Different parts of book	33.7	51.5	35.6	40.5
All parts of book	38.1	17.6	33.9	30.2
Total	100.0	100.0	100.0	100.1

$\chi^2 = 17.9$; $P = 0.001$; 4 DF

* Total reflects missing data.

4.1.3. Shelf Browsers

When shelf browsers were asked how they knew which shelves had books of their interest, 47.8% said that they used the online catalog (table 27). Apparently these users obtained the Library of Congress class number that took them to the book shelves of their subject interest. A knowledge of the shelf location from previous visits was mentioned by 23.9% of users, 7.5% asked library staff, 11.9% used some other method, and 6.0% used a combination of methods.

Table 27. Shelf Selection Methods by Browsers

Method	Browsers (%) n=67
LCS	47.8
Card catalog	1.5
Knew from previous visits	23.9
Asked library staff	7.5
Other method	11.9
Combination of methods	6.0
Not recorded	1.5
Total	100.1

A comparison of the three groups of users shows that shelf browsers are more likely than the other two groups to read for personal reasons (table 21). Browsers actually examine a book before borrowing it for later reading. What features of a book do browsers use for selecting a book? Browsers were asked to select one or more choices from the following features: (1) title, (2) skimming the pages, (3) author's name, (4) table of contents, (5) blurbs on the cover, (6) book index, and (7) pictures or illustrations (table 28). Skimming the pages was the most popular method of selecting a book. While a total of 39.1% of the browsers mentioned this method, 17.4% used it exclusively. Apparently this group found skimming the pages of greater assistance than examining the table of contents to determine relevance of a book. Author information was used in combination with other methods but never exclusively. In general, browsers tend to use a combination of methods for selecting a book.

4.2. Information Search Patterns

Information search behavior may be described as a series of consecutive choices a user makes. In the context of the present study, a user selects a particular library among many alternatives as a source for finding a nonfiction book. The user then selects a particular method or combination of methods for choosing a given book and, having obtained the book, selects one or more methods for finding the information.

Given that a user has several choices for these decisions, the resulting number of theoretical combinations of choices is very high. However, within the framework of this study the series of choices a user makes is in part determined by the structure of the interview script. In this study, 72 combinations were possible; 55 actually occurred. The combination of choices that repeat frequently shows patterns in information search behavior. To examine whether any patterns emerged, users' responses to questions about context of use, amount of book read, and features used to find information were analyzed. Observable patterns are shown in figure 4 and discussed in the following sections.

4.2.1. Specific-item Users

Findings reported in this section are based on the analysis of 186 specific-item users. For 13 of the 197 specific-item users, researchers failed to collect data for one or more of the questions used in

Table 28. Features Used by Browsers

Feature	Browsers (%) n=69
Title	
Used exclusively	15.9
Used with other methods	20.3
Total	36.2
Skimming the pages	
Used exclusively	17.4
Used with other methods	21.7
Total	39.1
Author	
Used exclusively	0.0
Used with other methods	2.9
Total	2.9
Tables of contents	
Used exclusively	8.7
Used with other methods	14.5
Total	23.2
Blurbs on cover	
Used exclusively	0.0
Used with other methods	1.4
Total	1.4
Book index	
Used exclusively	2.9
Used with other methods	1.4
Total	4.3
Pictures or illustrations	
Used exclusively	0.0
Used with other methods	4.3
Total	4.3

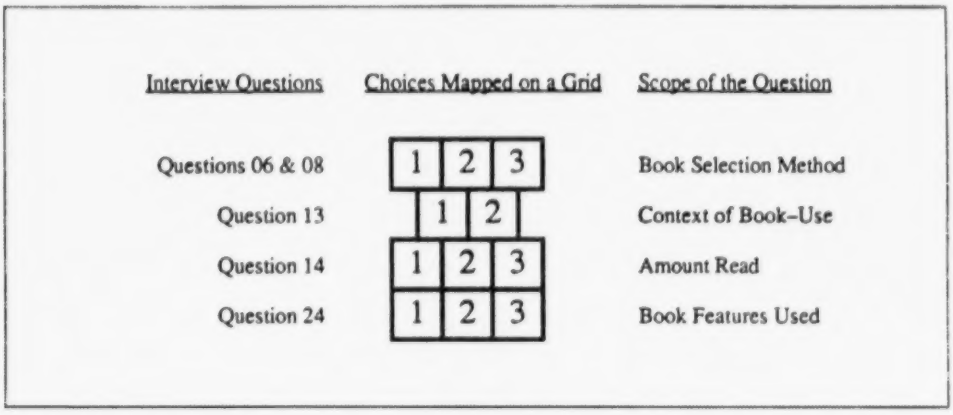
this analysis. Twenty of the twenty-four possible patterns occurred in this study. In subgroup 1, 32.3%, users were looking for a specific book, needed it for school, and read one-fourth of the book or less (col. 5). Because of the skip patterns in the interviewing script not all users were asked what features they used for finding information. Nonetheless, it is evident that table of contents and book index were used by greater than half of this group (col. 2).

In subgroup 2, 18.3%, users were looking for a specific book, needed it for school, and read greater than half of the book but less than three-fourths (col. 5). Again, most of these users used the table of contents or book index (col. 2).

In subgroup 3, 26.9%, comprised those users who were looking for a specific book, need it for school, and read almost or all of the book (col. 5). While a majority of this subgroup scanned the entire book, a sizeable proportion used table of contents or book index for finding information (col. 2).

Users in subgroup 4, 5.4%, were looking for a specific book, needed it for personal use, and read one-fourth of the book or less (col. 5). The users of the next two subgroups differ from the first in the amount of book read. Users in subgroup 6, 11.8%, who read for personal reasons tended to read more of a book (col. 1).

Legend



Book selection method gave users three choices:

1. Had prior knowledge of this book
2. Selected it using the library catalog
3. Selected it from the shelves

Context of use had four choices which were were collapsed to two:

1. School/Business
2. Personal/Home

Amount of book read gave users seven choices which were collapsed into three:

1. About one-fourth of the book or less
2. About half or three-fourths of the book
3. Almost all or all of the book

Book features for finding information gave users seven choices which were collapsed in three:

1. Table of contents or index
2. Others
3. (Scanning) entire book

Figure 4. Information Search Patterns

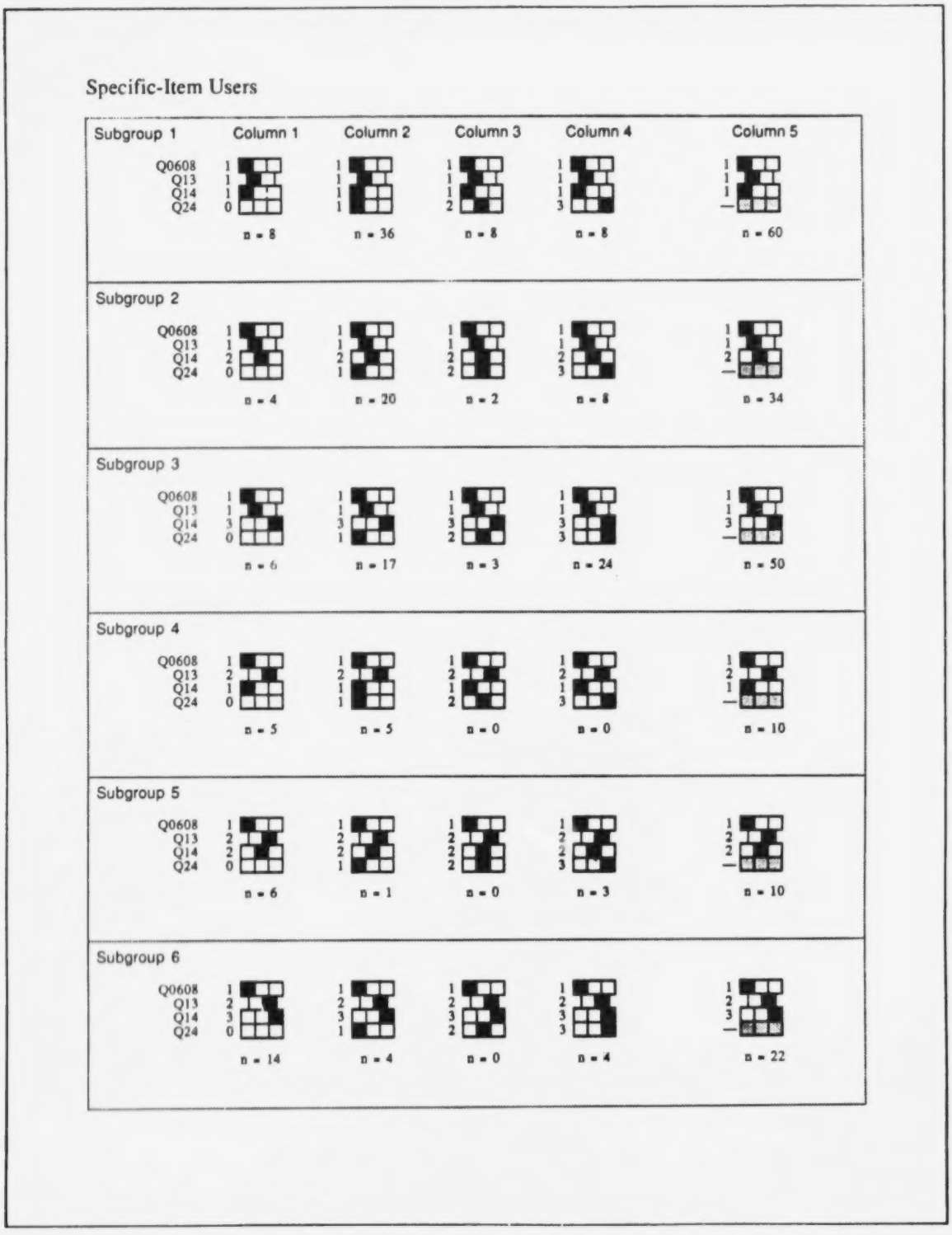


Figure 4. Information Search Patterns *(Continued)*

Catalog Users

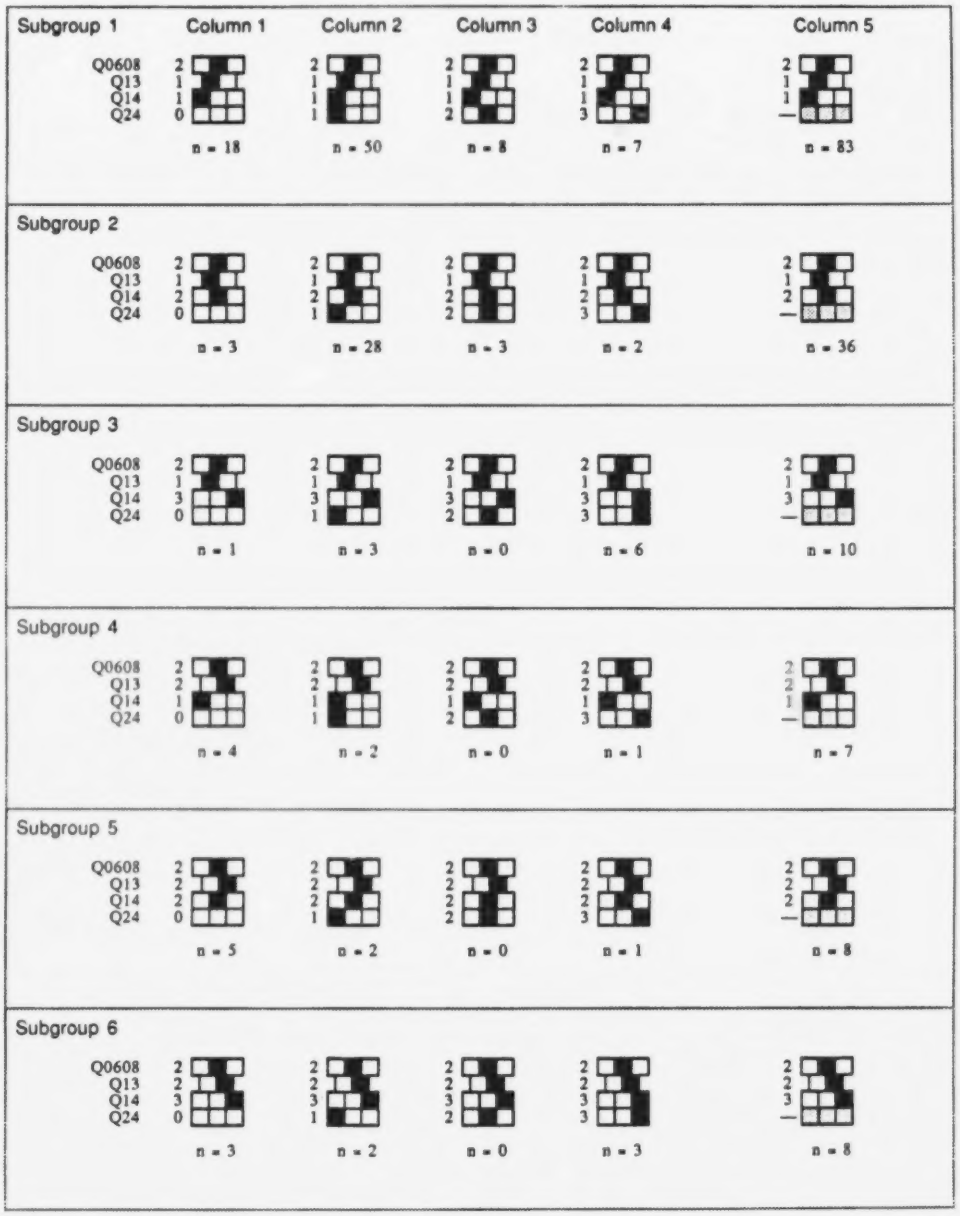


Figure 4. Information Search Patterns *(Continued)*

Shelf Browsers

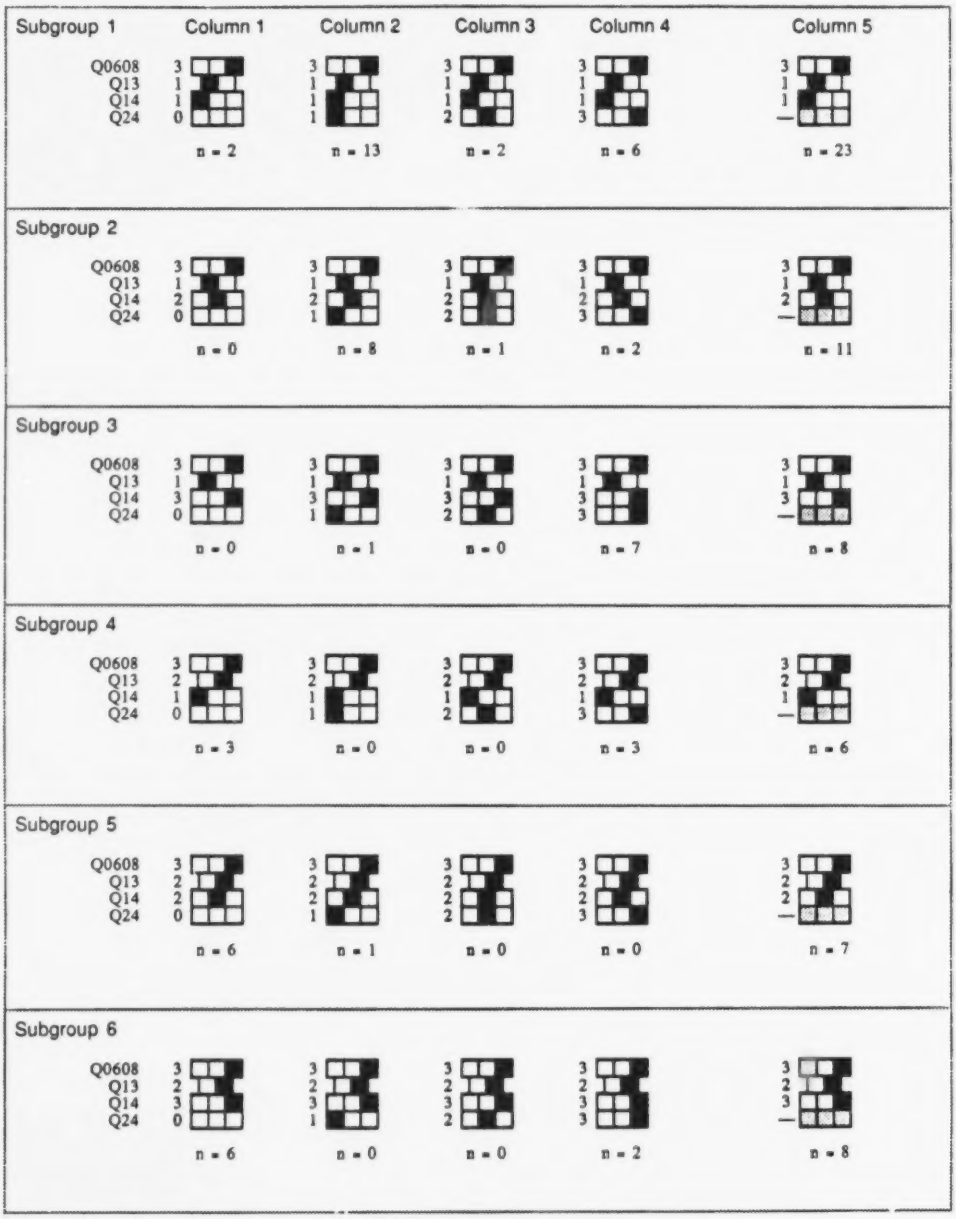


Figure 4. Information Search Patterns *(Continued)*

Overall, the majority of users looking for specific nonfiction books not only read them for school but were also most likely to read one-fourth of the book or less.

4.2.2. Catalog Users

An analysis of responses of 152 catalog users showed the trends discussed in this section. For 8 of the 160 catalog users, researchers failed to collect data for one or more questions used in this analysis. Twenty of the twenty-four possible patterns occurred in the study. Users in subgroup 1, 54.6%, used the library catalog to select the book, used this book for school, and read one-fourth of the book or less (col. 5). A vast majority of these users used the table of contents or index (col. 2).

As in the preceding group, users in subgroup 2, 23.7%, selected the book at the catalog and used it for school. These users read greater than one-fourth but less than three-fourths of a book (col. 5).

Some users, subgroup 3, 6.6%, selected the book at the catalog, needed it for school, and read almost all or all of the book (col. 5).

In subgroup 4, 4.6%, users selected the book at the catalog, needed it for home, and read one-fourth of the book or less.

Users in subgroups 5 and 6, 5.3% each, selected the book at the catalog and needed it for home. Subgroup 5 read greater than one-fourth of the book but less than three-fourths (col. 5); subgroup 6, almost all or all of the book.

Overall, the majority of the catalog users needed the book for school, read one-fourth of the book or less, and used the table of contents.

4.2.3. Shelf Browsers

For 4 of the 67 shelf browsers, researchers failed to collect data for one or more questions used in this analysis. Findings are based on analysis of responses by the remaining 63 users. Fifteen of the twenty-four possible paths occurred in this study. The largest number of shelf browsers, subgroup 1, 36.5%, selected the book at the shelves, needed it for school, and read one-fourth of the book or less (col. 5). Again, many used the table of contents or the book index (col. 2).

Subgroup 2, 17.5%, differs from the previous in that the amount of book read ranged from half to three-fourths (col. 5). Subgroup 3, 12.7%, read almost all or all of the book. Users in the remaining subgroups read for personal reasons. The amount of book read by these subgroups ranged from less than one-fourth to almost all or all (col. 2).

4.2.4. Summary

Certain trends emerge across the three groups. The majority of users in each of the groups, 23.2% of all users, needed the nonfiction book for school, read one-fourth of the book or less, and used table of contents or book index for finding information. The corresponding percentage of users who needed a nonfiction book for personal reasons and read one-fourth of the book or less is 3.7%.

4.3. Subject Dispersion of Users' Information Needs

One of the objectives of this study was to explore the subject dispersion of users' information needs. To examine subject dispersion we looked at users' responses to:

1. Scope of the information needs
2. Purposes/reasons underlying the information search
3. Subject dispersion as indicated by Library of Congress Classification (LCC)

These three analyses were based on users' responses to questions 4, 5, 10, 12, and 20. Questions 4 and 5 obtained data on the subject content of the book as described by the user and as indicated by the LCC. Users' answers to the remaining three questions provided additional data. To recall, 81.2% of the users stated a specific use for the information. Only these users were asked to describe the specific use. Therefore, we did not have equivalent amount of data from all users.

4.3.1. Scope of Information Needs

For each user, we categorized the subject scope of the information need as: (1) specific, 39.0%; (2) focused, but not specific, 52.1%; and (3) broad, 8.9% (table 29). Responses such as "applications of game theory to international crisis bargaining" or "facial expression in nonverbal communication" were categorized as specific. In contrast, responses such as "current trends of the American family" or "women in the work place" were considered focused but not specific. Responses such as "increase knowledge of Chinese philosophy" or "military training" were judged to be broad in scope. Phrases in themselves, interpreted out of context, do not reveal the level of specificity. It must be emphasized that these categories were determined by interpretations of all relevant data for each of the five questions. A sorting of this data by the three groups of users shows no particular pattern.

Table 29. Scope of Information Need by User Category

	User Category			
Scope	Specific-item Users (%) n=197	Catalog Users (%) n=160	Browsers (%) n=67	Total* (%) n=426
Specific	39.1	38.8	40.3	39.0
Focused, but not specific	50.8	55.6	46.3	52.1
Broad	10.2	5.6	13.4	8.9
Total	100.1	100.0	100.0	100.0

$\chi^2 = 4.7$; $P = 0.32$; 4 DF

* Total reflects missing data.

4.3.2. Subject Dispersion by LCC

By definition, classification schemes such as the Library of Congress Classification (LCC) notation attempt to bring together books on a subject or related subjects. Thus, sorting nonfiction books by the classification scheme should indicate the subjects that are frequently read by the library's users. Although LC has twenty-one major classes, just seven account for 80.0% of the books users read (table 30). In fact, 50.0% of all the materials fall into three major classes: P (Language and Literature), E and F (History: American), and H (Social Sciences). Ideally, the percentages shown in table 30 should be verified against a corresponding LC class breakdown of nonfiction books which circulate from the Main Library. However, such data are not generated by the Main Library. A conversation with a library staff member suggests that, overall, these percentages represent the strengths of the collection at the Main Library.

Even though this study focused on nonfiction books, language and literature (class P), the top ranking LC class, was the subject area of one-fourth of all users (table 30). While fiction books are generally classed under P in LC scheme, criticisms of fiction are also classed in P. Researchers distinguished readers who read fiction from those who read criticisms and essays.

4.4. Comparison with Related Studies

In this section, findings related to the premises and methods of book selection are compared with recent related studies (Sabine and Sabine 1986, Gates 1987). The findings are then compared with those of the public library study (Prabha, Bunge, Rice 1987).

4.4.1. Nonfiction Book Use in Other Academic Environments

In the present study, 75.2% of the users viewed the information they obtained as specific. The findings of the Gates study are surprisingly similar. A recalculation of the responses by academic users (lecturers and teachers, researchers and students) shows that 71.4% of these were looking for specific information or data. The Sabine and Sabine study did not collect data on whether users were looking for specific information.

Table 30. Distribution of Nonfiction Books by LC Class

LC Classification by Frequency	(%) n=426	Cumulative (%)
P—Language and literature	25.1	25.1
E, F—History: America	12.7	37.8
H—Social Sciences	12.2	50.0
D—History: general and old world	11.5	61.5
B—Philosophy, psychology, religion	8.9	70.4
G—Geography, anthropology, recreation	7.3	77.7
J—Political science	2.6	80.3
Q—Science	2.3	82.6
T—Technology	2.1	84.7
R—Medicine	1.9	86.6
L—Education	1.4	88.0
Z—Bibliography, library science	1.2	89.2
A—General works	0.9	90.1
M—Music	0.9	91.0
S—Agriculture	0.9	91.9
K—Law	0.5	92.4
N—Fine arts	0.5	92.9
U—Military science	0.5	93.4
C—Auxiliary sciences of history	0.2	93.6
V—Naval science	0.2	93.8
Other	1.4	95.2
Data not recorded	4.7	99.9

In the Sabine and Sabine study, 346 of the interviewees were from universities. Of these, 86.0% reported reading half the book or less. The percentage of users reading an equivalent amount of the book in the present study, 65.9%, is lower than in the Sabine and Sabine study probably because that study included users who read journals.

The Gates study gave choices for answering the question how much of the book was read. A recalculation of the answers by the academic users shows 46.1% of 512 users reported reading one-fourth of the book or less. This percentage is remarkably similar to that found in the current study, 46.2%.

To recall, in the present study, 46.2% reported having prior knowledge of the book, 37.6% said that they selected the book at the catalog, and the remaining 15.7% selected the book at shelves. In the Gates study, 29.3% of the academic users selected books by browsing, 21.1% selected the book using the catalog or index, and 49.5% used other methods. Prior knowledge of the book was apparently grouped into the latter category. Although Sabine and Sabine mention three methods of selection, only browsing, 24.0%, is common with the two other studies. As noted, these authors included journals in their study. Consequently, users' responses "had read regularly," 23%, presumably refer to journals. The other method, "referenced," 53%, perhaps includes some catalog use.

Although the specific percentages in the three studies may differ because of study design, the findings support the premises underlying the inclusion of nonfiction book use in electronic information systems. In general, users do read nonfiction books for obtaining information, and a large proportion of these users read nonfiction books in part.

4.4.2. Nonfiction Book Use in Academic Library and Public Library Environments

In the public library study data were collected at four branch libraries and the Main Library. In the academic library study, data were collected only at the Main Library of the OSU Library System. The findings of the present study are compared with the findings of only the Main Library

of the public library system for the following reason: we noticed that within the public library system, the patterns of use at the Main Library differed from the branch libraries. For example, only 39.0% of users at the branches, compared with 50.0% at the Main Library, were looking for specific information.

In the academic library setting, 75.2% of users described the information they sought as specific (table 31). This compares to 50.0% of the users in the public library who gave a similar response. Do users of the two libraries differ in the amount of nonfiction books they generally read? At the academic library 46.2% of the users, in contrast to 31.7% of users at the public library, read about one-fourth of the book or less (table 32); for users reading less than one-fourth of the book the figures are 24.9% and 16.2%, respectively (not shown in table). This trend reverses for "almost all" or "all of the book."

Table 31. Specificity of Information by Library Type

	Type of Library	
Specificity of Information Needed	Academic (%) n=331	Public (%) n=154
Specific	75.2	50.0
General	24.2	50.0
Total	99.4	100.0

$\chi^2 = 31.54$; $P = 0.005$; 1 DF

Table 32. Amount Read by Library Type

	Type of Library	
Amount Read	Academic (%) n=426	Public (%) n=154
About $\frac{1}{4}$ of the book or less	46.2	31.7
About $\frac{1}{2}$ to $\frac{3}{4}$	27.4	22.7
Almost all or all	26.4	45.5
Total	99.9	99.8

$\chi^2 = 19.76$; $P = 0.005$; 2 DF

How users selected nonfiction books in the two studies is shown in table 33. The differences are striking. In the research library only 15.7% of the users selected the book at the shelves. The corresponding percentage for the public library is 50.0%. The largest group at the research library, 46.2%, had prior knowledge of the book.

It must be noted that in the public library study, only those users who stated that they were looking for specific information were asked what features they used for finding that information. For reasons stated elsewhere in this report, in the academic library study all those who described the information they obtained as general were also asked what features they used. Striking differences are noticeable (table 34). In the academic library, table of contents was mentioned 61.0%; the corresponding percentage for the public library is 41.6%.

The findings of the public library study suggested that the premises examined were more likely to be found true in an academic library setting. The current study confirms this hypothesis. Moreover, in the academic library setting, table of contents and book indexes were used more often for finding specific information than in the public library setting.

Table 33. Book Selection Methods by Library Type

Method	Type of Library: Academic (%) n=424	Type of Library: Public (%) n=154
Had prior knowledge of book	46.2	28.6
Chose book using LCS or card catalog	37.6	21.4
Chose book at shelves	15.7	50.0
Total*	99.5	100.0

$\chi^2 = 70.7$; $P = 0.005$; 2 DF
* Total reflects missing data.

Table 34. Features Used to Find Information by Library Type

Feature	Type of Library: Academic (%) n=331	Type of Library: Public (%) n=77
Table of contents		
Used exclusively	17.5	13.0
Used with other methods	43.5	28.6
Total	61.0	41.6
Book index		
Used exclusively	6.9	14.3
Used with other methods	33.2	13.0
Total	40.1	27.3
Preface		
Used exclusively	0.6	0.0
Used with other methods	10.9	2.6
Total	11.5	2.6
Tables, charts, and diagrams		
Used exclusively	0.3	2.6
Used with other methods	7.3	6.5
Total	7.6	9.1
Photographs or sketches		
Used exclusively	0.0	3.9
Used with other methods	3.9	9.1
Total	3.9	13.0
Entire book		
Used exclusively	21.1	32.5
Used with other methods	23.0	16.9
Total	44.1	49.4
Other		
Used exclusively	3.3	1.3
Used with other methods	3.3	2.6
Total	6.6	3.9

5. Summary and Conclusion

The present study in a academic library setting, and the preceding study in a public library setting, examined two assumptions of nonfiction book use: that nonfiction books are generally read for obtaining information and tend to be read in parts. Although the specific percentages differ, the findings of both studies support these premises.

To collect the most accurate information, the questions centered on the one book the user remembered best. As noted, a potential problem with this selection method is that users would more likely select a book they read more. Therefore, estimates of the proportion of the book read may be higher than the proportion for a randomly selected book. This is an issue of tradeoff of increased accuracy of response versus a biased estimate. A greater proportion of users may, in fact, read short sections of nonfiction books than this study indicates.

Unlike the public library study, in the present s ly the layout of the library and electronic counter, which tracks all library traffic, did not permit researchers to estimate the proportion of users who checked out nonfiction books. We regret this omission.

Some of the analyses of the public library data suggested that premises underlying the creation of full-text systems of nonfiction books may be more strongly supported in an academic library environment. The findings of the present study supported this view. Three out of four users in the academic library were looking for specific information. In the public library, two out of three were looking for specific information. In the academic library, nearly half of all the users read one-fourth of the book or less; in the public library one-fourth of the users read one-fourth of the book or less.

Can a user who reads one-fourth or less of a book be viewed as a target user of nonfiction books in an electronic mode? Do users who read short sections of a book read the text sequentially? Or, do users browse and skip around text to find information that is relevant to their needs? In the present study, 29.4% of the users found the information in one part of the book. While 30.2% of the users found information in all parts of the book, the largest group of users, 40.5%, said that the information they sought was in different parts of the book. The corresponding percentages of the public library study are 6.7%, 33.6%, and 59.7%, respectively. Given these findings, the academic library users may be a better audience, at least initially, than public library for access to full-text of nonfiction books.

An examination of whether nonfiction books are appropriate candidates for electronic access should naturally address the methods by which users select or learn about a book. Users who are looking for specific items or who use online catalogs for selecting a book can be served by linking full-text systems to bibliographic information systems. In contrast, full-text systems of nonfiction books would approximate selecting books at the shelves only with difficulty. Findings suggest that a greater percentage of users in an academic library than in a public library might use electronic nonfiction books: 46.2% knew about the book before coming to the library (specific-item users) in the academic library compared to 28.6% in the public library; 37.5% selected the book at the catalog (catalog users) in the academic library, the corresponding percentage for public library is 21.4%; 15.7% selected the book at the book shelves (shelf browsers) in the the academic library whereas 50.0% selected likewise in the public library. Having obtained a book, how do users locate information? In the academic library environment, 61.0% used table of contents or book index compared to 41.6% in the public library. The use of table of contents or book indexes assumes perhaps a greater importance in electronic mode than in paper mode.

For one set of analyses, users' responses to four key questions (book selection method, the context in which the book was used, amount read, and the features used for finding specific information) were studied. Regardless of how users selected the book, 23.2% of all the users needed the book for school, read one-fourth of the book or less, and used table of contents or book indexes. A full-text system of nonfiction books may serve this group of users in an academic environment if suitable finding and navigational aids are provided.

We collected data on several factors that seemed to have potential relationship to the two premises of nonfiction book use behavior. Among these are the purposes for which users needed the information,

what context prompted the information need, whether users had specific use for the information, and how soon they intended to use the information. Of these, the context which occasioned the information need shows some relationship to issues of interest. It might be that reading nonfiction books for school is different from reading for personal reasons in a variety of ways. Motivation or interest are possible contributing factors. Half of those reading for school read one-fourth of the book or less. Those reading for school were more likely to mention a specific use for the information than those reading for other uses. Users reading for school tended to select a book more often at the catalog than by either browsing at the shelves or learning about it before coming to the library. Additional findings that merit a mention follow:

- Faculty are more likely than students to learn about a book from another bibliographic source; undergraduates are more likely than graduate students to read a book because it is required reading. On the other hand, graduate students are more likely to read a book because it was recommended by professor. Neither undergraduates nor graduate students mentioned learning about a book because of familiarity with the subject areas.
- Nearly three-fourths of all users in this study used the online catalog; about two-thirds of the catalog users were undergraduates.
- Paper or report writing was the most frequent use mentioned by nearly half the users. However, not all reading is school directed. Personal interest was mentioned as often as class reading.
- Relevance judgements alone contribute to greater than half the reasons for reading just part of a book.
- 50% of all the the books were in three major classes: P (Language and Literature), E and F (History-American), and H (Social Sciences).

6. Suggestions for Further Research

This study, like the preceding public library study, investigated the use of books that had been borrowed from the library. It is probable that books read within the library premises are more likely to be read in short sections than those borrowed for later reading. Hence, the nature of nonfiction book use on the library premises is an important area of investigation.

Full-text systems best serve users who can articulate clearly the information they need. That is, existing full-text systems allow for specific searches but do not usually facilitate searching for information by browsing. Given the widespread use of skipping and scanning text to find useful information in nonfiction books in conventional paper form, it seems only natural that users will likewise want to browse full-text systems. Assuming that browsing is not an entirely random activity but to some extent directed by the information seeker, the navigational methods different people use or that a given person might use at different times are worth investigating. Such an investigation becomes important in view of the increasing availability of full-text databases for creating electronic information systems.

Nonfiction books in an electronic mode could fill an important role in allowing users to make relevance judgement based on scanning actual text of the item desired before obtaining it through interlibrary loan. We recommend a study of interlibrary loan users on the relevance of items borrowed.

Appendix A

Interview Script

Book-Use Survey

A Script for a Personal Interview

OSU Library Version (01/29/87)

Interviewer - CP DAR DC

Date - ___/___

Location - BR RL

Time - ___:___

Sex - M F

We are conducting a survey to learn how people use books for getting information.
(Think of "information" as one or more ideas or facts.)

Could you please take a few minutes to answer some questions?

1. Are you returning the book(s) for yourself? yes ☐ no ☐ ○

2. Are you returning any nonfiction? yes ☐
(nonfiction contains factual information) no ☐ ○

3. How many nonfiction books? ___

**(Please select a nonfiction book that you remember best.
We will now focus our questions on this one book.)**

4. What is this book about? _____

_____

5. (book call number) _____

Book-Use Survey

A Script for a Personal Interview
OSU Library Version (01/29/87)

6. Did you have prior knowledge of this book?

yes [1]

(describe) _____

no [2] ⇩ 8

7. How did you know which shelves to go to?
(Since you used more than one,
please rank them in order of importance)

√√√

used LCS [1] ___ ⇩ 12
used the card catalog [2] ___ ⇩ 12
knew from previous visits [3] ___ ⇩ 12
asked the library staff [4] ___ ⇩ 12
other [5] ___ ⇩ 12

(describe) _____

8. Did you decide on this book ...

using LCS [1]
using the card catalog [2]
at the shelves [3] ⇩ 10

9. Did you search using ...
(Since you used more than one,
please rank them in order of importance)

√√√

author's name [1] ___ ⇩ 12
title of the book [2] ___ ⇩ 12
subject [3] ___ ⇩ 12
other [4] ___ ⇩ 12

(describe) _____

Interview Script *(Continued)*

52

Book-Use Survey — **A Script for a Personal Interview**
OSU Library Version (01/29/87)

√√√

10. How did you know which shelves to go to?
(Since you used more than one,
please rank them in order of importance)

- used LCS [1] ___
- used the card catalog [2] ___
- knew from previous visits [3] ___
- asked the library staff [4] ___
- other [5] ___

(describe) _____

√√√

11. Which of the following helped you select the book?
(Since you used more than one,
please rank them in order of importance)

- blurbs on the cover [1] ___
- skimming the pages [2] ___
- table of contents [3] ___
- book index [4] ___
- pictures or illustrations [5] ___
- author's name [6] ___
- title of the book [7] ___

12. Can you tell me why you borrowed this book? _____

_____

Interview Script *(Continued)*

Book-Use Survey

A Script for a Personal Interview

OSU Library Version (01/29/87)

√√√

13. Is this book for ...
(Since you used more than one, please rank them in order of importance)

school [1] ___
business [2] ___
home [3] ___
personal [4] ___

14. Did you read ...

none of the book [1] ⇩ 15
less than 1/4 [2] ⇩ 16
about 1/4 [3] ⇩ 16
about 1/2 [4] ⇩ 16
about 3/4 [5] ⇩ 16
almost all [6] ⇩ 17
all of the book [7] ⇩ 17

15. You did not read this book because ...

_____

_____ ⇩⇩ 25

16. You decided not to read the rest of the book because ...

_____

_____

17. Did the book contain the information you were looking for?

yes [1]
no, wasn't in the book [2] ⇩ 22
no, wasn't looking for information [3] ⇩⇩ 25

Interview Script *(Continued)*

Book-Use Survey — **A Script for a Personal Interview**
OSU Library Version (01/29/87)

18. **Was the information you needed ...**
in one part of the book [1] ⇩ 20
in different parts of the book [2]
in all parts of the book [3] ⇩ 20

19. **Were the parts ...**
together [1]
apart [2]

20. Do you have any specific use(s) for this information?
yes [1]
(describe) _____
no [2] ⇩ 25

21. When do you expect to use this information?
have used already [1]
within a week [2]
a month [3]
six months [4]
a year [5]
perhaps never [6]

22. You were looking for information about ...
_____
_____

23. Would you regard this information as ...
specific [1]
general [2]

Interview Script *(Continued)*

Book-Use Survey

A Script for a Personal Interview

OSU Library Version (01/29/87)

√√√

24. To find the information, did you look at the ...
(Since you used more than one,
please rank them in order of importance)

table of contents [1] ___
book index [2] ___
preface [3] ___
tables, charts, and diagrams [4] ___
photographs or sketches [5] ___
entire book [6] ___
other [7] ___

(describe) _____

25. Are you a ...

freshman [1]
sophomore [2]
junior [3]
senior [4]
graduate student [5]

(major/department) _____

continuing education [6]
faculty [7]

(department) _____

staff [8]
other [9]

(describe) _____

Thank you for answering our questions.

Interview Script *(Continued)*

Appendix B

Estimating Subjects Missed

It was difficult to get an accurate count of users who were missed. Users returned and checked out books at the same counters. It was therefore difficult for interviewers to distinguish users who were returning books from those who were checking them out, especially whenever traffic was heavy. Therefore, we developed a method to estimate the number of users missed. An additional person ("counter") was assigned to count users missed by the interviewers. However, it was not possible to cover every randomly assigned time slot. Data were therefore collected during ten representative time slots.

To select the time slots to be covered, it was decided that each day of the week be represented at least once, each time slot between 10 a.m. and 4 p.m. be represented at least twice, and each week be represented at least once. In this way, all similar time slots were covered at least once.

Statistical techniques for entering data were used to estimate the number of users missed. The objective was to obtain a similarity score for each pair of clusters. A pair consisted of one cluster for which data were obtained and a cluster for which data were missing. The factors used in producing this similarity score were number of interviewers, time of day, number of users interviewed, and day of week. A weighted average of users missed for the most similar clusters with a counter was used to estimate the number of users missed for each cluster without a counter. This process was repeated until all clusters were assigned a number. Finally, regression analysis was done on the estimated and actual misses to check for extreme cases. The estimation method proved reliable and conservative.

Appendix C

Randomization Method

The clusters were randomized as follows:

1. Select first week.
2. Consider the first time slot.
3. Roll dice. If dice is 5 or 9, select time slot.
4. If time slot is the last one in the week, go to step 7; else, go to step 3.
5. Select the next time slot.
6. Return to step 3.
7. If at least 45 time slots have been selected, stop; else, select next week and return to step 2.

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